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PHESS Program Earns National Honor

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The Indiana State Department of Health (ISDH) Public Health Emergency Surveillance System (PHESS) was honored at the eHealth Initiative's (eHI) first annual Improving Health Care Quality through Information and Technology Awards. The eHI is a not-for-profit organization committed to improving the quality, safety, and efficiency of health care through information and information technology.

The eHI presented the awards to eight organizations for demonstrating leadership and excellence in utilizing health information technology or health information exchange to drive improvements in the quality, safety, and efficiency of health care. Awardees were honored during a dinner at the Ronald Reagan Building and International Trade Center on October 10 in Washington, D.C. Awards were presented in four categories: Engaging Consumers, Aligning Financial and Other Incentives, Transforming Care Delivery at the Point of Care, and Improving Population Health.

The PHESS received the award for Improving Population Health. Mike Wade, Syndromic Surveillance Epidemiologist, accepted the award on behalf of the ISDH. According to an eHI press release, "The Indiana Public Health Emergency Surveillance System (PHESS), a program of the Indiana State Department of Health, received the eHI Blueprint Award for Improving Population Health. PHESS is an outstanding example of a "biosurveillance" system that leverages a health information exchange system to detect early disease indicators to identify outbreaks before definitive diagnoses are made."

According to *eHI's Blueprint: Building Consensus for Common Action*, the organizations receiving the awards "are models for how the use of health IT and health information exchange can support improvements in the quality, safety, and efficiency of health care."

<u>Article</u>	Page No.
PHESS Program Earns National Honor	1
<i>E. coli</i> and Shiga-toxin Reporting	2
<i>OUTBREAK SPOTLIGHT....</i>	3
E ³ Easy Epidemiology for Everyone	6
Training Room	8
Data Reports	9
HIV Summary	9
Disease Reports	10

The ISDH PHESS team also delivered three presentations at the International Society for Disease Surveillance annual syndromic surveillance conference held October 10-12 in Indianapolis. Topics included:

- Improving Rabies Surveillance Using Syndromic Data (Michael Wade, MPH; David Trepanier, MSEE; James Howell, DVM, MPH) — oral presentation
- Increasing Local Access to Syndromic Surveillance Data (Michael Wade, MPH; David Trepanier, MSEE) — oral presentation
- Exercise Demonstrates Effective Syndromic Surveillance Response Process (Michael Wade, MPH; Sandra Gorsuch, MS; Thomas Duszynski, BS; Ryan Gentry, BA) — poster presentation

***E. coli* and Shiga-toxin Reporting**

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Enteric Epidemiologist

The ISDH has recently received questions from local health departments (LHD), laboratories, and health care professionals (HCP) about reporting laboratory results of "shiga toxin". *Escherichia coli* shiga toxins belong to the same toxin family as that produced by *Shigella dysenteriae* type 1. Many laboratories are performing shiga-toxin testing by EIA (enzyme immunoassay), since results by EIA can be obtained much faster than culture. If a person develops hemolytic uremic syndrome (HUS), the organism may not be detected in culture, but the EIA will be positive. EIA testing also detects other enterohemorrhagic *E. coli* (EHEC) types that are not O157 but do produce shiga toxin.

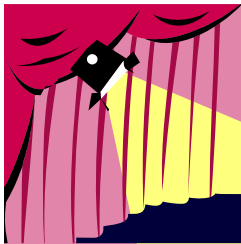
The LHD will investigate a shiga-toxin positive case as an *E. coli* case, not a *Shigella* case. Although the ISDH *E. coli* investigation form has not yet been updated to reflect this change in laboratory testing, please continue to use the *E. coli* O157:H7/HUS form (#49689) for reporting all diarrhea-producing *E. coli* infections and write in "shiga-toxin positive" under "Culture Results". Since shiga toxins can be found in other organisms, all culture results should be included with the investigation form. The case will be considered a "probable" case of *E. coli* infection if the only laboratory results available are shiga toxin by EIA.

Health care providers must immediately report any positive shiga-toxin test results and diarrhea-producing *E. coli* cases to the LHD. Laboratories must immediately report any shiga-toxin positive results to the ISDH. Laboratories must also submit *E. coli* isolates to the ISDH Laboratories. Prompt reporting and submission of isolates to the ISDH are essential in determining if the isolate is part of an outbreak.

For more information on disease reporting, please refer to the Communicable Disease Rule for Physicians, Hospitals, and Laboratories, 410 IAC 1-2.3, October 11, 2000, at www.in.gov/isdh/publications/comm_dis_rule.pdf. HCP requirements are included on pages 12-

16, and laboratory reporting requirements are included on pages 16-18. Communicable disease reports may be faxed to the ISDH at 317.234.2812. Please note that results received from reference laboratories also need to be sent by the submitting laboratory.

For more information, please see the Centers for Disease Control and Prevention (CDC) case definition for *E. coli* at www.cdc.gov/epo/dphsi/casedef/shiga_current.htm and the CDC case statement for shiga-toxin testing at www.nphl.org/documents/ShigaToxinTestingRecommendations.pdf. You may also contact Lynae Granzow, ISDH Enteric Epidemiologist, at 317.233.7125.



OUTBREAK SPOTLIGHT...

Outbreak Spotlight is a recurring feature in the Indiana Epidemiology Newsletter to illustrate the importance of various aspects of an outbreak investigation. The event described below highlights an investigation of a gastroenteritis outbreak at a local food establishment that was spread from employees to patrons.

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Field Epidemiologist District 2

Background

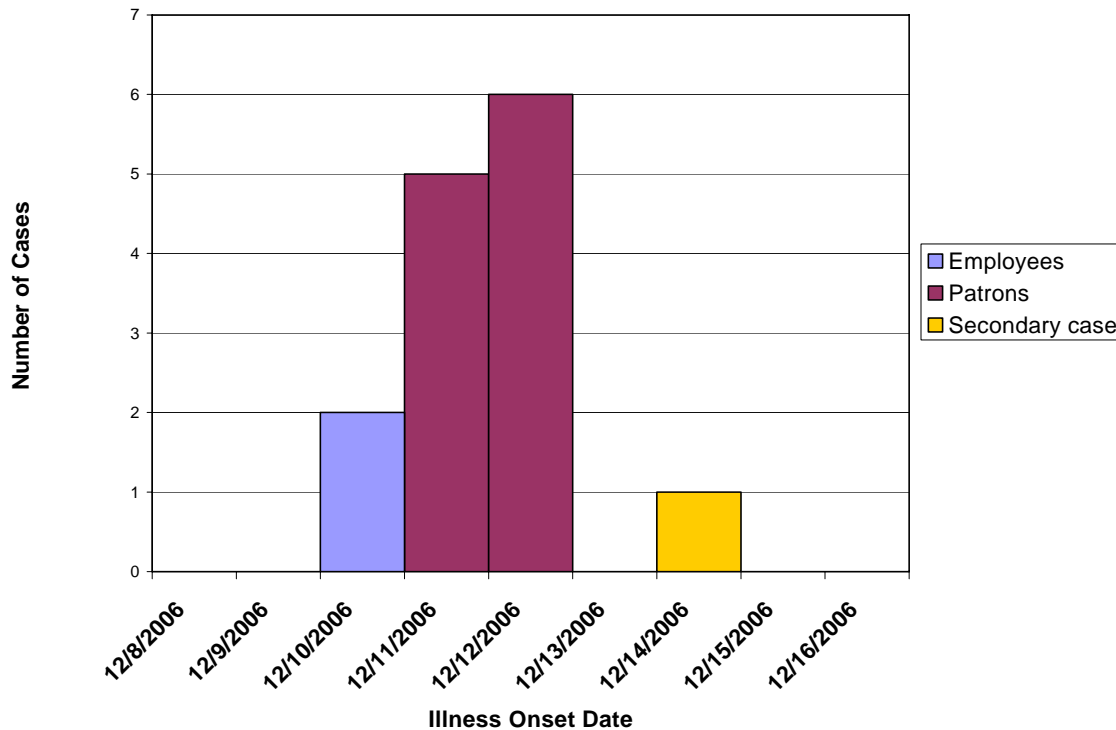
On December 13, 2006, the Elkhart County Health Department (ECHD) notified the Indiana State Department of Health (ISDH) of a possible foodborne illness outbreak associated with a local food establishment. Predominant symptoms included nausea, vomiting, and diarrhea.

Epidemiologic Investigation

The ECHD and the ISDH initiated a collaborative investigation of the outbreak. Two questionnaires were used in the investigation. The ECHD used an environmental health food establishment questionnaire to assess food preparation practices and employee illness. The ISDH used an enteric questionnaire to determine patron illness onset, symptoms, and food consumption. Seventeen patrons and three employees were interviewed during the investigation. A case was defined as any individual who consumed a meal at the food establishment or was epidemiologically linked to a patron who had consumed a meal at the food establishment and developed vomiting or diarrhea on or after December 10, 2006. Fourteen individuals met the case definition (Figure 1). The mean duration of illness was 37 hours (range: 1 to 144 hours). The incubation period ranged from 28 to 58 hours. One individual was hospitalized. Three

symptomatic patrons submitted stool specimens for bacteriologic and viral testing at the ISDH Laboratories.

Figure 1: Elkhart County's Norovirus Outbreak with Number of Cases and Illness Onset Dates



Environmental Investigation

On December 13, 2006, a representative of the ECHD visited the food establishment to review food-preparation practices, including Hazard Analysis of Critical Control Points, and to inquire about employee illness. No food samples were collected, because no common food item had been identified as the suspected vehicle.

The investigation revealed that some food-holding temperatures were below the required 135° F minimum. The employee at the front cash register was not using gloves or utensils for dispensing ice or lemon slices into patrons' beverages and frequently touched her face and clothing without washing her hands. Patrons' trays were not sanitized after each use. The manager revealed that three food handlers had been ill with runny nose, sore throat, nausea, vomiting, and diarrhea prior to the patrons becoming ill.

Laboratory Results

Three stool specimens were analyzed for bacteriologic (*E. coli* 0157: H7, *Campylobacter*, *Shigella*, and *Salmonella*) and viral (*Norovirus*) pathogens at the ISDH Laboratories. All three samples tested positive for *Norovirus* and negative for bacteriologic pathogens.

Conclusion

The investigation confirmed that an outbreak of gastroenteritis among patrons and staff of an Elkhart County restaurant occurred from December 10-14, 2006. Although no specific food item was identified as a vehicle of illness, the only common exposure reported was consumption of a meal at the food establishment on December 10, 2006.

The causative agent of this outbreak was *Norovirus*. Three patrons tested positive. In addition, nine other patrons and two employees had symptoms compatible with *Norovirus* infection from December 10-14. Two secondary cases were also identified among the groups of patrons.

Norovirus is found in the vomit or stool of infected people. Common transmission routes include consumption of contaminated foods or liquids, contact with contaminated surfaces or objects, and contact with someone who is infected. The virus is highly contagious and environmentally stable. The incubation period is 24-48 hours. Symptoms of *Norovirus* infection include nausea, vomiting, diarrhea, and some stomach cramping. Symptoms may also include a low-grade fever, chills, headache and body aches, and fatigue. The illness often begins suddenly and lasts 24-48 hours, with most individuals resolving without complications. Infected people can shed the virus for as long as two weeks after recovery.

Foodborne outbreaks of viral gastroenteritis usually occur when an infected food handler with inadequately washed hands prepares food that is served raw (e.g., salads, vegetables, etc.) or that is handled extensively after cooking (e.g., sliced sandwich meats, rolls, etc.). Two employees who met case definition experienced illness onset prior to the outbreak. The food establishment in question served several ready-to-eat food items. To minimize the risk of further transmission, the establishment sanitized all contact surfaces with a 1:10 bleach-water solution, including patrons' trays, and educated employees on proper hand washing.

Recommendations

In general, most *Norovirus* outbreaks can be prevented by strictly adhering to the following guidelines:

- 1) Thoroughly wash hands with soap and water before, during, and after preparing and serving food; after using the restroom; and after assisting someone who has diarrhea and/or vomiting.
- 2) Persons with diarrhea and/or vomiting should not prepare food for others and should limit direct contact with others as much as possible.
- 3) Children ill with diarrhea and/or vomiting should not attend daycare or school.
- 4) Persons with diarrhea and/or vomiting or *Norovirus* infection shall be excluded from employment involving food handling¹.

The Indiana State Department of Health extends its appreciation to the Elkhart County Health Department and the restaurant staff for their cooperation and participation in this investigation.

References

1. Indiana Retail Food Establishment Sanitation Requirements, 410 IAC 7-24-122.
2. Norovirus Fact Sheet, Centers for Disease Control and Prevention,
www.cdc.gov/ncidod/dvrd/revb/gastro/norovirus.htm

E Easy Epidemiology for Everyone

E³ is a new feature of the Indiana Epidemiology Newsletter dedicated to exploring the fundamentals of epidemiology. Each month, a different epidemiology concept will be explored to enhance understanding of basic epidemiology.

Surveillance

Surveillance is defined as “the systematic ongoing collection and analysis of data and the timely dissemination of the information to those who need it to take action” (Last, 2001). Surveillance is what local and state health officials do every day to monitor the pulse of health in a community. Public health officials generally use two types of surveillance methods: passive and active.

Passive surveillance is used most frequently, since it is the least costly and least labor intensive. Passive surveillance relies on outside sources to provide information about disease to public health officials. Reportable disease surveillance is an example of a passive surveillance system. State law requires health care providers, hospitals, and laboratories to report certain conditions or laboratory results to the local health department (LHD) for investigation. Upon receiving these reports, LHD officials will conduct a case investigation to determine if there is any link to other cases of the same disease within their jurisdiction. If there is an associated link, the local health officials can conduct active surveillance to identify additional cases.

Active surveillance is used when public health officials actively seek information regarding specific cases of illness. This may involve contacting hospitals, emergency departments, clinics, private providers, long-term care facilities, schools, and even places of employment, depending on the disease and the suspected exposure. Active surveillance is more time-consuming and costly to maintain and, thus, is generally used for shorter periods of time, such as outbreak investigations.

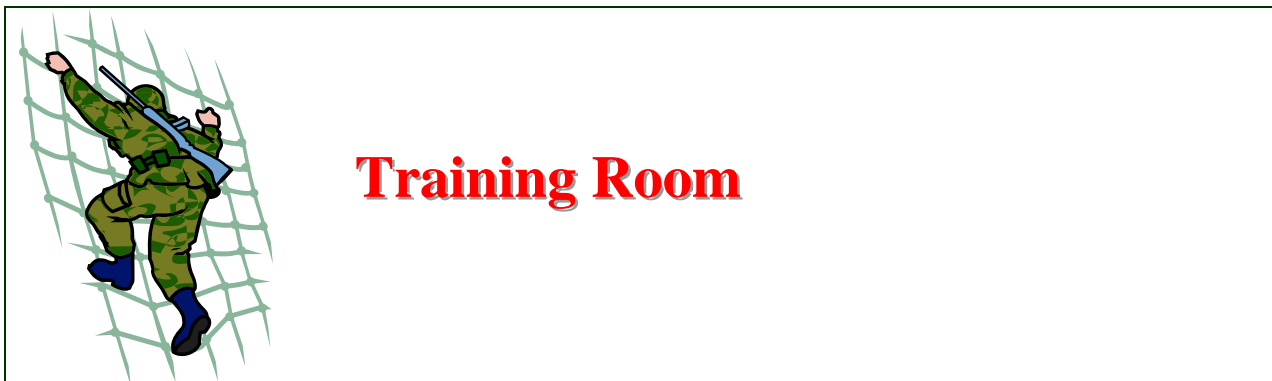
Other types of public health surveillance that are commonly used include syndromic surveillance and sentinel surveillance.

Syndromic surveillance collects health information prior to actual disease diagnosis (e.g., emergency department chief complaint data) to detect disease outbreaks earlier. Syndromic surveillance categorizes data into syndrome categories, such as gastrointestinal or respiratory, and is monitored daily by local and state health officials for increases in certain syndromes that may indicate increased illness in the community.

Sentinel surveillance is used to monitor conditions that are not reportable or have a specific seasonality. Sentinel surveillance enlists information from health care providers who volunteer to participate in the surveillance program to indicate the level of a particular illness in the community. In Indiana, one of the most successful sentinel surveillance programs is the influenza sentinel physician program. Sentinel physicians enrolled in the program report levels of influenza-like illness each week year-round and submit specimens for testing at the ISDH Laboratory. The ISDH then forwards this information to the Centers for Disease Control and

Prevention (CDC). Summary information is reported back to the sentinels and to local health departments. Sentinel influenza data have been collected in Indiana for over 10 years.

Next month's topic: Descriptive Epidemiology



INDIANA STATE DEPARTMENT OF HEALTH IMMUNIZATION PROGRAM PRESENTS:

Immunizations from A to Z

Immunization Health Educators offer this FREE, one-day educational course that includes:

- Principles of Vaccination
- Childhood and Adolescent Vaccine-Preventable Diseases
- Adult Immunizations
 - Pandemic Influenza
- General Recommendations on Immunization
 - Timing and Spacing
 - Indiana Immunization Requirements
 - Administration Recommendations
 - Contraindications and Precautions to Vaccination
- Safe and Effective Vaccine Administration
- Vaccine Storage and Handling
- Vaccine Misconceptions
- Reliable Resources

This course is designed for all immunization providers and staff. Training manual, materials, and certificate of attendance are provided to all attendees. Please see the Training Calendar for presentations throughout Indiana. Registration is required. To attend, schedule/host a course in your area or for more information, please reference

<http://www.IN.gov/isdh/programs/immunization.htm>.

ISDH Data Reports Available

The following data reports and the *Indiana Epidemiology Newsletter* are available on the ISDH Web Page:

http://www.IN.gov/isdh/dataandstats/data_and_statistics.htm

HIV/STD Quarterly Reports (1998-June 2006)	Indiana Mortality Report (1999, 2000, 2001, 2002, 2003, 2004, 2005)
Indiana Cancer Incidence Report (1990, 1995, 1996, 1997, 1998)	Indiana Infant Mortality Report (1999, 2002, 1990-2003)
Indiana Cancer Mortality Report (1990-1994, 1992-1996)	Indiana Natality Report (1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005)
Combined Cancer Mortality and Incidence in Indiana Report (1999, 2000, 2001, 2002, 2003, 2004)	Indiana Induced Termination of Pregnancy Report (1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005)
Indiana Health Behavior Risk Factors (1999, 2000, 2001, 2002, 2003, 2004, 2005)	Indiana Marriage Report (1995, 1997, 1998, 1999, 2000, 2001, 2002)
Indiana Health Behavior Risk Factors (BRFSS) Newsletter (9/2003, 10/2003, 6/2004, 9/2004, 4/2005, 7/2005, 12/2005, 1/2006, 8/2006, 10/2006, 5/2007)	Indiana Infectious Disease Report (1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005)
Indiana Hospital Consumer Guide (1996)	Indiana Maternal & Child Health Outcomes & Performance Measures (1990-1999, 1991-2000, 1992-2001, 1993-2002, 1994-2003, 1995-2004)
Public Hospital Discharge Data (1999, 2000, 2001, 2002, 2003, 2004, 2005)	

HIV Disease Summary

Information as of September 30, 2007 (based on 2000 population of 6,080,485)

HIV - without AIDS to date:

385	New HIV cases from October 2006 thru September 30, 2007	12-month incidence	6.69 cases/100,000
3,818	Total HIV-positive, alive and without AIDS on September 30, 2007	Point prevalence	66.38 cases/100,000

AIDS cases to date:

335	New AIDS cases from October 2006 thru September 30, 2007	12-month incidence	5.82 cases/100,000
4,106	Total AIDS cases, alive on September 30, 2007	Point prevalence	71.38 cases/100,000
8,383	Total AIDS cases, cumulative (alive and dead)		

REPORTED CASES of selected notifiable diseases

Disease	Cases Reported in September MMWR Weeks 36-39		Cumulative Cases Reported January – September MMWR Weeks 1-39	
	2006	2007	2006	2007
Campylobacteriosis	69	45	407	366
Chlamydia	1,378	1,635	14,909	15,573
Cryptosporidiosis	23	17	64	73
Cyclosporiasis	0	0	1	2
<i>E. coli</i> O157:H7	18	8	67	61
<i>Haemophilus influenzae</i>	12	2	63	45
Hepatitis A	3	9	19	23
Hepatitis B	7	12	41	41
Gonorrhea	665	770	6,634	6,683
Legionellosis	7	8	34	34
Listeriosis	3	2	12	14
Lyme Disease	0	1	20	39
Measles	0	0	1	0
Meningococcal, invasive	2	2	20	20
Mumps	0	0	10	1
Pertussis	30	7	176	47
Rocky Mountain Spotted Fever	1	0	6	5
Salmonellosis	131	66	686	553
Shigellosis	27	9	115	82
<i>Streptococcus pneumoniae</i> (invasive, all ages)	20	23	439	413
<i>Streptococcus pneumoniae</i> (invasive, drug resistant)	6	9	118	123
<i>Streptococcus pneumoniae</i> (invasive, <5 years of age)	5	3	47	33
Syphilis (Primary and Secondary)	8	2	67	40

REPORTED CASES of selected notifiable diseases (cont.)

Disease	Cases Reported in September MMWR Weeks 36-39		Cumulative Cases Reported January – September MMWR Weeks 1-39	
	2006	2007	2006	2007
Tuberculosis	4	7	93	99
Yersiniosis	1	1	8	13
Animal Rabies	2 (bats)	1 (bats)	11 (bats)	10 (bats)

For information on reporting of communicable diseases in Indiana, call the *Surveillance and Investigation* section of the *Public Health Preparedness and Emergency Response Division* at 317.233.7125.



The *Indiana Epidemiology Newsletter* is published monthly by the Indiana State Department of Health to provide epidemiologic information to Indiana health care professionals, public health officials, and communities.

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